elevated base. The leaf-margin is hispid-ciliate, although less prominently so than in the species. Short hispid hairs, widely spaced, are arranged in lines along the branches of the inflorescence; pedicels pubescent.

THE UNIVERSITY OF CINCINNATI,
Cincinnati, Ohio.

---

# GREAT BASIN PLANTS V.—AQUATICS

BASSETT MAGUIRE AND G. HORTIN JENSEN

THE following records are presented in continuation of discussion of rare or interesting plants of the Great Basin. Grateful acknowledgment is made to the Utah Wildlife Research Unit of the Federal Fish and Wildlife Service for certain specimens made available to this paper.

POTAMOGETON AMERICANUS C. & S., in 12 in. of water, Stewart Lake, Uinta Co., Utah, July 10, 1938, *G. H. Jensen & L. Dargan*, no. 153.

Until this present collection came to light, no Utah material had been seen by the writers, although the species had been included by Tidestrom in the Flora of Utah & Nevada. Failure to find this plant after a number of years search had almost convinced us that it was not likely to have been found in the state, and that its inclusion in the Utah range might have been due to misinterpretation of the amphibious form of *P. gramineus* L. This latter species abounds in the state, and, in the absence of well-formed submerged leaves, strongly simulates *P. americanus*.

*POTAMOGETON CRISPUS L., Ogden Bay Refuge, Weber Co., Utah, Aug. 2, 1937, *C. S. Williams*, no. 1241.

This introduced European species, known commonly from Minnesota eastward and sparingly from the Pacific Coast region, is now apparently collected only from the above station in the entire Rocky Mountain and Great Basin areas.

*POTAMOGETON FILIFORMIS Pers. (*P. interior* Rydb.), along dike, East Lake, Locomotive Springs, Box Elder Co., Utah, Sept. 15, 1936, *D. Hobson & Geo. Piranian*, no. 14850; Lyman Lake, Black's Fork River, Wasatch National Forest, Summit Co., Utah, July 27, 1939, *D. Hobson*, no. 51.

* The asterisk designates plants which are thought previously to have been unreported from our region.

The typical form seems to be considerably less common in Utah than the var. *borealis* (Raf.) St. John, and less frequent than the following.

POTAMOGETON FILIFORMIS Pers. var. *MACOUNII Morong, shallow water, Unit 2, Bear River Refuge, Box Elder Co., Utah, Sept. 12, 1932, *Maguire*, no. 3183; eddies of Salmon River, 10 mi. N. Challis, Custer Co., Idaho, July 15, 1934, *Maguire & Maguire*, no. 5434; Strawberry River, Wasatch National Forest, Wasatch Co., Utah, Sept. 8, 1939, *D. Hobson*, no. 39; side stream, West Fork, Smith's Fork, vic. Hewinta, Wasatch National Forest, Summit Co., Utah, July 10, 1939, *D. Hobson*, no. 31: abundant, shallow stream, 1 mi. W. Moroni, Sanpete Co., Utah, June 13, 1940, *Maguire*, no. 18651; frequent, shallow, rapidly flowing water, Fremont River, 1 mi. E. Fruita, Wayne Co., Utah, July 1, 1940, *Maguire*, no. 19273. All of the above collections seem to come well within the var. *Macounii* as delimited by St. John (1916), except *Maguire*, no. 18651 from Sanpete Co., Utah. The specimens of this collection strongly suggest a condition intermediate to *P. vaginatus* in the development of excessively large primary leaf sheaths.

The following three collections are intermediate between typical *P. filiformis* and the var. *Macounii:* warm springs along San Carlos River, San Carlos Indian Reservation, Gila Co., Ariz., March 30, 1935, *Maguire*, no. 10335; Posey Lake, Garfield Co., Utah, Sept. 3, 1936, *Geo. Piranian;* in 5 ft. of water, Tony Grove Lake, 8000 ft., Bear River Range, Cache Co., Utah, Aug. 5, 1938, *Maguire*, no. 16085.

POTAMOGETON FOLIOSUS Raf., var. *GENUINUS Fern., beaver pond, 1 mi. N. Warner Ranger Station, 9000 ft., La Sal Mts., Grand Co., Utah, Aug. 3, 1933, *Maguire et al*, no. 4368; common, Posey Lake, 9500 ft., Aquarius Plateau, Powell National Forest, June 27, 1940, *Maguire*, no. 19161; Strawberry River, Wasatch Co., Utah, Sept. 10, 1939, *D. Hobson*, no. 33; slow stream in meadow, 3 mi. n. e. Logan, Cache Co., Utah, May 21, 1939, *Maguire*, no. 16685.

Apparently only the var. *macellus* (Fernald, 1932) has previously been known in Utah.

*POTAMOGETON FRIESII Rupr., Bear Lake, W. Fk., Bear River, Summit Co., Utah, Sept. 4, 1939, *Dean Hobson*, no. 37; Lyman Lake, Black's Fk. Creek, Summit Co., Utah, July 27, 1939, *Dean Hobson*, no. 52.

Collections made in Glacier National Park, Montana (Maguire, 1934) revealed the presence of this species in the western states, extending the then known range south and westward from

British Columbia, Alberta, and North and South Dakota (Fernald, 1932). The above collections further extend the range by more than 700 miles.

*POTAMOGETON GRAMINEUS L. var. GRAMINIFOLIUS Fries, common on mud and in pools in marsh which had been covered with water during spring and early summer, south end Fish Lake, Aug. 24, 1938, Sevier Co., Utah, *Maguire*, no. 16202.

In addition to this cited number many collections have been made within the state, showing it to be common and generally distributed. This species, the *P. heterophyllus* of Am. authors, is recorded by this latter name by Tidestrom (1925) from Ruby Lake, Nevada. It is possible that much of material of Utah passing as *P. americanus* is *P. gramineus*, since the amphibious form of this species, becoming very coarse, considerably resembles the former.

POTAMOGETON PRAELONGUS Wulfen, common in water 6–15 ft. deep, vic. Twin Creeks, Fish Lake, Sevier Co., Utah, 8900 ft., Aug. 25, 1938, *Maguire*, no. 16219; Posey Lake, Garfield Co., Utah, Sept. 3, 1936, *Geo. Piranian*, no. 556; abundant, Posey Lake, Aquarius Plateau, Powell National Forest, Garfield Co., Utah, June 27, 1940, *Maguire*, no. 19162; Stanley Lake, Challis National Forest, Custer Co., Idaho, *A. S. Hazzard*.

Recorded by Tidestrom (1925) from Fish Lake, Utah, this species proved to be quite frequent, in water from 6–18 ft. deep of this lake. It is abundant in Posey Lake, the above record adding the second known station within the state. The Idaho collection of Dr. Hazzard offers a new record for the little known distribution of the species in this state.

*POTAMOGETON BERCHTOLDI Fieb., *P. pusillus* L. var. *mucronatus* (Fieber) Graebn., spring 1 mi. west of Logan, Cache Co., Utah, 4500 ft., *Maguire*, no. 13883; Fish Lake, Sevier Co., Utah, 8900 ft., *Maguire*, nos. 16200, 16203, 16174, and 16222; Bear River Refuge, Box Elder Co., 7200 ft., *Maguire*, no. 3182; all of these collections from Utah.

POTAMOGETON BERCHTOLDI Fieb. var. *TENUISSIMUS (Mert. & Koch) Fernald, *P. pusillus* L. var. *tenuissimus* Mert. & Koch. Bear River Refuge, June 18, 1936, *Maguire et al*, no. 14003; and two collections, *Piranian & Hobson*, nos. 13990, June 24, 1936, and 15997, June 23, 1936, all from the Bear River Refuge, Box Elder Co., Utah.

The excellent distribution maps of Fernald reveal no localities for the cosmopolitan *P. Berchtoldi* (*P. pusillus*) in Utah or in any

of the contiguous states. Rydberg, (1906) cites three localities from Colorado. The typical form as indicated by the above collections is obviously not uncommon in the state. The var. *tenuissimus* is known thus far only from the brackish waters of the Bear River Refuge.

*Potamogeton Robbinsii Oakes, Stanley Lake, Challis National Forest, Custer Co., Idaho, July 30, 1934, *A. S. Hazzard.*

The above collection apparently extends considerably southward the known range of the species, rare in the Intermountain Region, and previously unknown from the Great Basin.

*Potamogeton tenuifolius Raf., abundant, in water 3–12 ft. deep, narrows near north end of Fish Lake, *Maguire,* no. 16208; common in water 6–12 ft. deep, vic. outlet Twin Creeks, Fish Lake, 8900 ft., Sevier Co., Utah, *Maguire,* no. 16220; Silver Lake, Brighton, Big Cottonwood Canyon, Salt Lake Co., Utah, *Maguire,* no. 13156.

This species is possibly the *P. alpinus* or *P. lucens* of the Tidestrom (1925) flora.

*Potamogeton zosteriformis Fernald, gravelly bottom, shallow water, east side of North Bay, *Maguire,* no. 16207; soft muck bottom, North Bay, *Maguire,* no. 16226; both collections from Fish Lake, Sevier Co., Utah, altitude 8600 ft.

The distribution records and map of this species, given in much detail in the recent monograph of Fernald (1932), show this locality to occur in the center of a vast area in which the plant has hitherto been unknown. The nearest station in any direction from this newly discovered one is over 500 miles distant.

*Najas flexilis (Willd.) Rostk. & Schmidt, subsp. **caespitosa** Maguire, subsp. nov. Plantae dense caespitosae, 2–4 (5) cm. altae; foliis integris; testis cum (40) 50–70 seriebus longitudinalibus areolarum circum semen.

Plant densely fastigiately cespitose, 2–4 (5) cm. high; leaf margins essentially entire, rarely provided with a few fine spines; seed coat finely reticulate with (40) 50–70 longitudinal rows of areolae; in other critical characters similar to typical *Najas flexilis.*—Type. Common, sand-gravel bottom, shallow water to 12 in., Pelican Point, Fish Lake, 8600 ft., Fish Lake National Forest, Sevier Co., Utah, Aug. 3, 1940, *Bassett Maguire,* no. 19888. Cotype. Fish Lake, Sevier Co., Utah, *Maguire,* no. 19882; channel north end, Fish Lake, Sevier Co., Utah, Aug. 24, 1938, *G. H. Jensen & L. Dargan,* no. 201.

This interesting dwarfed population is known only from Fish Lake, Utah, but there occurs in abundance and with remarkable uniformity of size, habit and habitat. All of the plants vary between 2–4 cm., rarely 5 cm. in height, and grow in a narrow zone of sand-gravel bottom in water from 6–12 in. in depth. Prolonged search failed to reveal plants growing in deeper water or different habitat. Dr. R. T. Clausen (1940), competent student of *Najas*, who recently visited Fish Lake, and there studied the plant under field conditions, wrote, "Field observation of the plants strengthens my opinion that the population in Fish Lake is part of the collective species, *N. flexilis*, but I now incline more than ever to regard it as worthy of subspecific status."

*NAJAS GUADALUPENSIS (Spreng) Morong, locally common, shallow water with *Sagittaria cuneata*, *Zannichellia*, and *Chara*, pool, south end Oxbow Pond, ½ mi. s. Smithfield Sugar Refinery, Cache Co., Utah, Oct. 10, 1940, *Maguire*, no. 20198.

This species has apparently not previously been known from the entire Great Basin-Intermountain Region (Clausen, 1936).

NAJAS MARINA L., warm (80°–84° F.), hard-water springs, to 3 ft., growing on sandy bottom, Fish Springs, Juab Co., Utah, *G. H. Jensen & L. Dargan*, no. 203.

Recently additional material, but in condition too far disintegrated to preserve as record, has been submitted from Locomotive Springs, Box Elder Co., Utah.

Clausen (1936) gives the locality of the then known collection of *N. marina* as "Central Utah." Although the original collection from Utah may thus have been from one of the two stations recorded above, there now exists two definite localities for the species. In all probability it is of more widespread occurrence in the warmer and somewhat saline spring waters of western Utah.

*LILAEA SUBULATA H. B. K., in wet soil at edge of pond, vic. Shoshone Ranger Station, Minidoka National Forest, Twin Falls Co., Ida., *R. K. Gierisch*, no. 780.

This remarkable collection is apparently the first recorded for interior Western America. Its range hitherto has been known only from the Pacific Coast region, extending from British Columbia to South America. Muenscher (1938) has recently discussed the distribution of this aquatic.

ANACHARIS CANADENSIS (Michx.) Planchon, shallow water in pond, 2 mi. N. Oxford, Bannock Co., Ida., Sept. 18, 1932, *Maguire*, no. 3194; common, in water 6–12 ft. deep, Fish Lake, 8600 ft., Sevier Co., Utah, Aug. 25, 1938, *Maguire*, no. 16221; abundant, shallow and deep water, State Reservoir, Logan Canyon, vic. Logan, Cache Co., Utah, Oct. 18, 1940, *Maguire*, nos. 20262, 20263; common in water 6–15 ft. deep, Strawberry Reservoir, Wasatch Co., Utah, July 8, 1938, *G. H. Jensen & L. Dargan*, no. 87.

Tidestrom (1925) cites *A. canadensis* only from Panguitch Lake, Utah.

All specimens cited herein are deposited in the Intermountain Herbarium, Utah State Agricultural College.

## REFERENCES CITED

CLAUSEN, R. T. Correspondence of August 27, 1940.
CLAUSEN, R. T. Studies in the Genus Najas in the Northern United States. RHODORA **38**: 333. 1936.
FERNALD, M. L. The Linear-leaved North American Species of Potamogeton, Section Axillares. Mem. Gray Herb. III, 1932. Reprint from Mem. Am. Acad. Arts & Sci.
MAGUIRE, BASSETT. Distribution Notes concerning Plants of Glacier National Park, Montana. RHODORA **36**: 305. 1934.
MUENSCHER, W. C. Lilaea subulata in Washington. Torreya **38**: 8. 1938.
RYDBERG, P. A. Flora of Colorado. 1906.
ST. JOHN, H. Revision of North American Species of Potamogeton, Section Coleophylli. RHODORA **18**: 121. 1916.
TIDESTROM, IVAR. Flora of Utah and Nevada. Contr. U. S. Nat. Herb. **25**. 1925.

UTAH STATE AGRICULTURAL COLLEGE

---

POLYGALA VULGARIS NEW TO THE NORTH AMERICAN FLORA.—This odd little plant, *Polygala vulgaris* L., was found growing wild at Comox, Vancouver Island, British Columbia, in May, 1941, and referred through Mrs. L. Planta to the Provincial Museum, Victoria. My identification was confirmed at the Gray Herbarium, Harvard University, by Bernice G. Schubert. Professor M. L. Fernald, the Director, also informed me in a previous letter that its occurrence in the wild state in North America was at that time unknown. Mrs. Planta states that "it was growing on a grassy bank by a roadside forming part of a field that had been seeded down with imported seeds," most probably of European origin, where *P. vulgaris* occurs in abundance.